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January 14, 1999

Ms. Magalie Roman Salas  
Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY


Re: CC Docket Nos. 98-146; 98-147

Dear Ms. Salas:

In recent meetings with Federal Communications Commission staff, MCI WorldCom was asked for its view on the extent of the Commission's authority to issue regulations designed to promote the unbundling of network elements necessary to provide advanced services without altering the definition of the local loop previously adopted by the Commission. Attached is that analysis.

MCI WorldCom asks that this analysis be made part of the official record in the above referenced proceedings.

Very truly yours,

  
Bradley Stillman  
Senior Policy Counsel  
Strategic Advocacy

Enclosure

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## **UNBUNDLING xDSL LOOPS AND DSLAMS**

The Federal Communications Commission staff has asked for MCI WorldCom's view on whether the Commission has the authority under the 1996 Act to issue regulations to promote the unbundling of network elements necessary for the provision of advanced services without altering the definition of the local loop set out in the First Report and Order. In the First Report and Order, the Commission broadly defined the loop to be "a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central office and an end user customer premises." Section 51.319(a). As the Commission explained, it adopted a broad definition that encompassed a variety of loop types, rather than attempting to define each possible use of the loop. First Report and Order ¶ 380. The Commission made clear that "[t]his definition includes, for example, . . . two-wire and four-wire loops that are conditioned to transmit the digital signals needed to provide services such as ISDN, ADSL, HDSL, and DS-1 level signals." Id. The Commission made clear as well that at the CLEC's request, ILECs are required to "take affirmative steps to condition existing loop facilities to enable requesting carriers to provide services not currently provided over such facilities," id. ¶ 382, giving as an example an obligation to condition a loop to enable it to provide xDSL service. Id. See also id. ¶ 381 n. 826 ("loop conditioning may involve removing load coils or bridged taps that interfere with the transmission of digital signals"). Finally, in this regard, the Commission specified that "section 251(c)(3) does not limit the types of telecommunications services that competitors may provide over unbundled elements to those offered by the incumbent LEC." Id. ¶ 381.

The current definition of the loop (if effectively enforced) would be adequate to stop many of the ILEC anticompetitive practices that have to date stalled competition for advanced services. Thus ILEC decisions to prohibit many uses of the loop, or to limit CLECs to only those versions of DSL service that they themselves are deploying, plainly are inconsistent with the

current definition and related regulations. And ILEC policies which have the effect of assuring that they have the first-mover advantage, and that CLECs will be unable to lease xDSL-capable loops until the ILEC is offering xDSL service to its retail customers, are not consistent with the current definition.

#### I. DEFINING AN xDSL-EQUIPPED LOOP

Before we turn to consider rules based on the current loop definition, we reiterate what we stated in our formal written comments: the best regulatory approach would be for the Commission to clarify its current loop definition to make clear that the DSLAM is part of the loop element, while at the same time being a subelement that a CLEC may choose not to lease if it wishes to install its own DSLAM.

The current definition of the loop as a “transmission facility” does not state explicitly whether the facility includes the devices such as load coils that are part of that facility. In practice, CLECs that have requested voice grade loops have always received whatever devices were built into the loop to enhance the loop’s transmission functions. A DSLAM, as the “M” in its name denotes, is a multiplexor -- its translate different signals coming in from different lines into a single stream of data. That multiplexing function is very much a way to enhance the transmission capability of the loop. In this regard a DSLAM is most closely analogous to other features that have traditionally been considered part of the loop element. For example, the electronics located at a remote terminal that translate an analog signal into a digital signal have always been understood to be a part of the loop, just as the central office equipment that translates the digital signal back into an analog signal in a UDLC environment is considered to be part of the loop. Indeed, when ILECs have proposed substituting UDLC for IDLC as a way to facilitate the unbundling of digital loop carrier loops, they have never suggested that they are

offering CLECs a combination of different elements, even though they are proposing to provide to CLECs complex electronics that they must attach to both ends of the loop.

Under the current definition, however, ILECs might claim that the DSLAM would be part of the loop depending upon where it was located. If it is located between the NID and the main distribution frame (MDF), as would be the case when the premises is served by a digital loop carrier loop, the DSLAM would be part of the loop, just as the other electronics at the DLC are part of the loop. If the loop is an all-copper facility terminating at an MDF, however, ILECs might claim that the DSLAM would not be part of the loop, because in that configuration the DSLAM is located on the switch side of the MDF.

Such a regime makes no sense. The DSLAM serves the same multiplexing function no matter where it is located. Nor can it be plausibly maintained that a DSLAM is part of the switch, or transport, or any of the other elements identified in the Local Competition Order. Plainly, the DSLAM is loop transmission equipment. The Commission therefore ought to make clear CLECs are entitled to order a loop that includes loop enhancements -- whether they be load coils on a voice grade loop, or DSLAMs on an xDSL loop -- as well as a loop stripped of all such devices. Far from creating a “combination” issue by adopting this understanding, such a clarification will avoid a great deal of regulatory uncertainty. If the loop were to be defined as only the copper or fiber portion of the transmission facility, without any additional features, then the standard voice loop which happens to include load coils, and all DLC-configured loops, will be converted into “combinations of elements,” and their availability and price will become uncertain at best.<sup>1</sup>

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<sup>1</sup>Of course if the Commission proceeds with its “data affiliate” regulations, and ILECs establish data affiliates that own the DSLAMS, then, under the logic of the Commission’s regulations, the ILEC might well have no loops including DSLAM electronics to lease. For this

## II. REGULATIONS TO ENSURE ACCESS TO xDSL-CAPABLE LOOPS<sup>2</sup> AND DSLAMs.

Even if the Commission decides not to clarify its current definition of the loop and leaves in place a general definition that does not expressly include an “xDSL-equipped loop,” it could greatly advance the pace of competition for advanced services by adopting additional regulations further clarifying the statutory requirement that ILECs provide “nondiscriminatory access” to the loop.

The proper starting point is the self-evident proposition that a loop is not “unbundled,” and a CLEC cannot be said to have access to the unbundled loop, unless it has some commercially practical way to make use of all of the loop’s “functionality in order to provide a telecommunications service.” First Report and Order ¶ 269. See also id. ¶ 268 (rejecting the “suggest[ion] that the 1996 Act does not require unbundled elements to be provisioned in a way that would make them useful” as “inconsistent with the statute’s goals”). CLECs are entitled to access to the xDSL-capable loop “at any technically feasible point.” And if they are not given access at even a single technically feasible point, the incumbent has not in any real sense unbundled the xDSL-capable loop. In the First Report and Order, the Commission identified the central office distribution frame, or its equivalent, as one point of access to a loop. ¶¶ 379-380. See Rules 51.305(vi) and 51.319(a) (requiring access at “a distribution frame (or its equivalent)”). As we describe in what follows, because this point of access is frequently not a technically feasible point to gain access to a xDSL-capable loop (or to a DSLAM), in its

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and other reasons, as MCI WorldCom has elaborated in its previous submissions, we oppose these data affiliate regulations.

<sup>2</sup>An “xDSL-capable loop” is a copper loop capable of transmitting an xDSL signal, that is, a copper loop under a certain length without bridge taps, load coils or similar features that make xDSL transmission impossible, and also without the DSLAM electronics.

Advanced Services Order the Commission should define alternative technically feasible points of access.

For a loop to be used to provide xDSL service, it not only must be “xDSL capable” as required by the First Report and Order, but also must be able to be attached to a DSLAM at the place at which the copper portion of the loop terminates -- whether that be the remote terminal (in the case of a loop served by a digital loop carrier), or the central office (in the case of the traditional “home run copper” loop). In other words, to have access to an xDSL-capable loop, CLECs as a practical matter must either be able to connect the loop to their own DSLAMS where the copper portion of the loop terminates, or have access to the ILECs’ DSLAMs. CLECs then must also have some way to be able to pick up their customers’ traffic after it has left the DSLAM.

For there to be widespread competition for data services -- especially residential competition -- CLECs must have the right either to lease or to install their own DSLAMs. This is so for two reasons. First, in most remote terminals there will not be space for CLECs to install their own DSLAMs. And, given space constraints in central offices, there is often not enough space for CLECs to install their own DSLAMs in central offices. Leasing frequently will be not only the better choice, but the only choice.<sup>3</sup> Additionally, unless a LEC can serve at least several

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<sup>3</sup>Some ILECs have suggested that this problem can be avoided by taking a CLEC loop off of the fiber feed at the remote terminal and connecting it to abandoned copper that in turn is connected to the main distribution frame at the central office, and then to the CLEC’s collocation cage. This is an unacceptable response to a request for an unbundled xDSL-capable loop. The “abandoned copper” solution does not provide parity of service because the quality of xDSL service diminishes in proportion to the length of copper. Generally speaking, the longer the copper, the slower the service possible. An ILEC providing xDSL service through its digital loop carrier will therefore often be providing a better quality service than a CLEC who must make do with a copper feed all the way back to the central office. We therefore strongly agree with the Commission’s tentative conclusion that “if the incumbent LEC (or its advanced services affiliate) provides xDSL-based services through the use of a DSLAM at the remote terminal, the

hundred data customers through a DSLAM, it will not be economical for it to install its own DSLAM. That being so, in many smaller central offices serving residential customers, and in virtually all remote terminals, these economies of scale permit only one DSLAM. Accordingly, unless there is sharing of the DSLAM, in many locations there will be only one LEC in a position to provide xDSL service. And, since it is the incumbent monopolist that owns the loop, owns the remote terminals and owns the central offices, and that already provides local service to virtually all of the customers in its service area, the ILEC has tremendous first-mover and cost advantages. As a result, absent sharing of the DSLAM, in many locations the ILEC will become the data monopolist.

In sum, the Commission's decision to require unbundling of the DSLAM is a critical procompetitive step and a necessary precondition to assuring access to unbundled xDSL-capable loops. Accordingly, the Commission should adopt regulations to assure CLECs the right both to install their own DSLAMs, and to lease the functionality of the ILECs' DSLAMs.

A. Collocating CLEC DSLAMs.

In central offices and remote terminals with space (and in which there are sufficient customers to warrant the investment), competitors must be able to install their own DSLAMS. For that to happen, CLECs must be able to collocate their DSLAM equipment on terms and conditions that give them access at parity with the ILECs. This requires cost-based collocation pricing -- CLECs must pay no more for the opportunity to locate their equipment at the ILEC

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competitive LEC must be able to avail itself of that option, either through the use of the incumbent LEC's DSLAM or its own DSLAM collocated at the remote terminal." 706 NPRM at ¶ 173. "The incumbent LECs must make available, in a nondiscriminatory manner, to competitive LECs the same methods that the incumbent (or its advanced services affiliate) uses itself to provide advanced telecommunications capability such as xDSL-based service." Id.

central office (and for the right to transport traffic away from that office) than the ILECs themselves.<sup>4</sup>

In addition to cost-based pricing rules, collocation rules must be set to allow parity of service. As MCI WorldCom indicated in its Section 706 Comments, that means that the rules must allow a CLEC to attach the loop to the DSLAM, and the DSLAM to the transport function, in exactly the same way that the ILEC does. The Commission's proposed "cageless" collocation and virtual collocation rules help provide such parity. The Commission should also make clear that ILECs may not require CLECs to use cross-connects or equipment they themselves do not use when they connect their xDSL-capable loops to their DSLAMs, or their DSLAMs to their data transport.

B. Leasing DSLAM Functionality.

When a CLEC chooses to lease the ILEC's DSLAM rather than to install its own, it does not need to collocate its own equipment, and so should not have to face the many problems associated with collocation.<sup>5</sup> The CLEC that leases DSLAM equipment, however, faces an entirely different set of problems created by this current limitation in DSLAM technology: DSLAMs cannot be "multi-hosted." That is to say, there is no way to separate one carrier's

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<sup>4</sup> Until pricing rules are clarified by the Supreme Court, the Commission may be of the view that it has no authority to set collocation prices or pricing methodology. Pricing is a critical issue -- PUC-approved collocation prices (or state collocation rules which allow the ILEC to set collocation prices on a case-by-case basis) typically have not resulted in cost-based prices and have not allowed CLECs to collocate equipment on terms that allow them to compete with ILECs. Without cost-based collocation, as a practical matter CLECs may lose the right to install their own DSLAMs.

<sup>5</sup>We use the word "should" advisedly. While CLECs that lease DSLAMs should be able to lease DSLAM functionality and transport from the DSLAM without the need to collocate, ILECs nevertheless have imposed entirely pointless collocation requirements on CLECs in analogous situations, and there is no reason to believe that they will not require similar discriminatory practices here. See *infra* pp. 13-15.



traffic from another's once that traffic has entered the DSLAM.<sup>6</sup> As a result, it is currently not possible for a CLEC leasing DSLAM functionality (or leasing a loop that includes a DSLAM) to pick up its own customers' xDSL traffic at the DSLAM itself, and it is currently not possible for the ILEC to separate the DSLAM from the data transport or from the data switch without disconnecting all traffic that moves through the DSLAM. At these points one carrier's traffic cannot be segregated from another's -- all traffic is multiplexed together into one inseverable stream. This limitation should come as no surprise: DSLAM technology was developed in a monopoly environment to serve ILECs that have no interest in developing technology that would allow more than one provider to provide xDSL service.

Regulation should respond to this fact in two ways: one reflecting the current state of technology, and another looking to the future.

1. Unbundling -- Short-Term Solutions Ensuring the CLECs' Right To Combinations of Elements.

Given the current limitations of DSLAM technology, once data traffic has entered the DSLAM, it cannot be identified with a particular carrier until after it has passed through a packet switch. Typically, packet switches are not located at every central office, but in one or more offices within the ILEC's network. In such an environment, unbundled access to the leased DSLAM (or to an xDSL-equipped loop including DSLAM electronics) requires the ILEC to give the CLEC nondiscriminatory access to the DSLAM in combination with the packet switch, along with any transport that connects the DSLAM and the switch. There is simply no other way to

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<sup>6</sup>The traffic from various customers to various carriers can be provisioned on different virtual circuits. These virtual circuits are distinct, but they exit the DSLAM on one physical transmission interface, making it impossible to route the traffic to different carriers until after the traffic hits the first data switch.

gain access to the leased DSLAM. Commission regulation should make clear that ILECs are required to provide this access as part of their obligation to unbundle the DSLAM.

The same considerations apply when defining what it means to provide unbundled access to the DSL-capable loop. To repeat, access to the loop requires access to a DSLAM at the place the copper portion of the loop terminates. For most loops served through digital loop carriers, where it is not possible for CLECs to collocate their own DSLAMS, that means that the Commission should find that access to the loop necessarily carries with it the right to pick up the traffic at the network side of the packet switch. That is to say that access to the loop necessarily includes not only access to the loop element itself, but also to the leased DSLAM, in combination with the transport and the packet switch. The same is true where there is no room at the central office to collocate a DSLAM, or where the ILEC provides no nondiscriminatory method of combining an ILEC loop with a CLEC DSLAM. When it is not practically or economically feasible for a CLEC to install its own DSLAM, the only technically feasible point at which the CLEC can gain access to a xDSL-capable loop currently is at the network side of a packet switch. And that requires a CLEC to make use of a combination of ILEC elements: the xDSL-capable loop, the DSLAM, transport to the ILEC's data switch, and the switch itself. Consequently, if ILECs do not make that combination of elements available in a nondiscriminatory and cost-based manner, they have not provided meaningful access to an xDSL-capable loop, because CLECs will have no effective way to combine that loop with their own network to provide xDSL service.

No doubt the ILECs will respond that this would be to require access to a combination of elements -- the loop, the DSLAM, the packet switch, and (in many situations) transport. And they will no doubt argue that the Eighth Circuit ruled that the Commission had no authority to

require combinations. The Commission should anticipate and reject this misreading of the Eighth Circuit's Iowa Utilities Board decision, on the following two related grounds:

First, the Commission is not formally requiring a combination of elements; it is formally requiring access to one discrete element -- the loop, or the DSLAM -- at the only point at which such access is technically feasible -- the packet switch. If the ILEC can provide some other method of providing access to a leased DSLAM or to an xDSL-capable loop, it is free to offer it. But if the only technically feasible point of access to an element that must be unbundled requires ILECs to provide a combination of elements, then to the extent the Commission is free to require that the element be unbundled, it must also be free to require the ILEC to provide the access necessary for CLECs to combine that element with the elements of their own networks.

The situation presented is closely analogous to that addressed in the Commission's Third Report and Order involving shared transport. Shared transport is a single network element, but, as the Commission held, "access to those [transport] links on a shared basis effectively requires a requesting carrier to utilize the routing table contained in the incumbent LEC's switch." Id. at ¶ 36. See also id. at ¶¶ 42, 44, 47. While shared transport is itself a single network element, access to that element therefore requires access to transport and switching in combination. Making that plain is not the same thing as a Commission ruling requiring a combination of elements in violation of the Eighth Circuit's Iowa Utilities Board decision. Indeed, the Eighth Circuit squarely rejected such a parallel when it affirmed the Third Report and Order. Southwestern Bell Tel. Co. v. FCC, 153 F.3d 597 (1998). In that decision the Eighth Circuit expressly rejected the claim that shared transport is an illegal combination because it "is of no use whatsoever unless a new entrant additionally purchases switching," id. at 604, explaining that there was a clear difference between a lawful rule that simply requires ILECs to provide

meaningful access to a single network element, and the rule struck down in Iowa Utilities Board requiring ILECs to provide elements “on a combined basis” that the FCC “had never suggested were themselves network elements,” because the FCC believes that it would be helpful for CLECs to be able to use the particular “bundle” of elements. Id. at 606. In sum, relying upon the Eighth Circuit’s affirmance of the Third Report and Order, the FCC may clearly require ILECs to unbundle both their DSLAMs and their xDSL-capable loops, and may also make clear that in order to have meaningful access to these elements, ILECs must allow CLECs access to those elements at their packet switches, even if that necessarily means that the ILEC must lease other elements to the CLEC in combination with the DSLAM or xDSL-capable loop.

Second, the Commission’s authority to require access to the elements it has required to be unbundled (even if that access requires a “combination” of elements) was clear even before the Eighth Circuit affirmed the Third Report and Order. The logic of that court’s decision affirming the Third Report and Order followed directly from the logic of its earlier Iowa Utilities Board decision. The Act plainly contemplated that CLECs would make use of more than one element of the incumbent’s network in combination, and in Iowa Utilities Board the Eighth Circuit never suggested that there was some limit to the number of ILEC elements that a CLEC could make use of. Indeed, the court rejected the ILEC’s argument that the CLECs at least should be prohibited from providing service using only ILEC elements in combination. Neither did the court purport to prohibit the FCC under any set of circumstances from requiring ILECs to provide CLECs with combinations of elements.

Instead, what the Eighth Circuit ruled was that the ILECs “shouldn’t have to do all of the work,” and that where it was possible for the CLECs to do the combining, and where the ILECs allowed the CLECs to do the combining, the CLECs, and not the ILECs, should do the

combining. Specifically, the Eighth Circuit struck the Commission's Rule 315(b), 47 CFR § 51.315(b) -- prohibiting ILECs from separating elements already combined in the ILEC's network -- based on a negative inference it drew from the last sentence of subsection 251(c)(3) of the Act, which states that an ILEC "shall provide such unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications service." 120 F.3d at 813 (quoting the statute). In the Eighth Circuit's view, when it was possible for either the ILEC or the CLEC to combine the elements, it could be inferred from section 251(c)(3) that Congress intended that only the "requesting carriers [could be required to] combine such elements."

In explaining its ruling, the court provided what it understood to be a paradigmatic example: a CLEC request for the ILEC loop in combination with the ILEC switch, where the ILEC itself combined the two elements at its main distribution frame. The Eighth Circuit evidently believed that it would not be discriminatory for the ILEC to require the CLEC to make the connection at the main frame itself, just as the ILEC does, rather than have the ILEC do the work for the CLEC. The Commission regulation requiring the ILEC to do the combining in that situation was ruled to be inconsistent with the statutory provision understood to require only that ILECs provide elements "in a manner that allows [CLECs] to combine" them.

On the other hand, the court expressly acknowledged that it was not addressing a case in which it was impossible for the ILEC to provide the separate elements "in a manner that allows requesting carriers to combine such elements." Thus, in rejecting the CLECs' arguments that the ILECs would not "allow entrants access to their networks" to combine elements, and so would leave CLECs without a means of combining the elements themselves, the court did not say that in such a situation the CLECs would simply have to do without the combination of elements they

requested. Instead, it reasoned that the ILECs would not have pressed for vacation of Rule 315(b) in good faith unless they intended to allow entrants the necessary access. 120 F.3d at 753. This is hardly a surprising result: the provision from which the court derived its negative implication requiring the vacation of Rule 315(b) was a provision which expressly “allows requesting carriers to combine . . . elements.” The Eighth Circuit could not and did not draw from that provision any inference at all about the case in which it would not be possible for “requesting carriers to combine . . . elements.” And nothing in the Eighth Circuit’s decision remotely supports the claim that an ILEC does not have to provide two elements in combination even when it is not possible to separate them.

Accordingly, whatever can be said of the Eighth Circuit’s Iowa Utilities Board ruling, which currently is under review by the Supreme Court, it in no way limits the FCC’s ability to order the ILECs to provide elements in combination when it is not possible for the ILECs to “provide such unbundled network elements in a manner that allows requesting carriers to combine such elements,” either because the ILEC cannot separate the elements or because the CLEC cannot recombine them in a nondiscriminatory fashion once they have been separated. For that reason, the Eighth Circuit ruling does not prevent the Commission from ordering ILECs to allow CLECs to pick up xDSL traffic at the ILEC packet switch, where that is the only place such traffic can be picked up in a nondiscriminatory manner, or picked up at all.

The Commission recently addressed an analogous point in its ruling rejecting BellSouth’s second request for section 271 relief in Louisiana. There, the Commission rejected BellSouth’s argument that the Eighth Circuit permitted it to refuse to provide the loop and switch in a “combined” form, and at the same time refuse to allow CLECs the access they needed to combine those two elements in the same way that the ILECs themselves combined them. Pars.

168-170. In BellSouth's view, so long as it provided any way for the CLEC to combine the loop and the switch, even if it was not the same way that the ILEC itself used, and even if it did not provide a way for the CLEC to recombine that was as efficient as the way the ILEC itself used, it had done all that the statute required. In other words, in BellSouth's view, it had absolute liberty to "unbundle" the network without regard to whether the CLEC could "rebundle" it in a nondiscriminatory manner.

The Commission rejected this argument, and in particular rejected BellSouth's claim that the Eighth Circuit ruling somehow required the Commission to tolerate BellSouth's anticompetitive proposal. It determined that BellSouth could not require CLECs to introduce pointless and potentially service-affecting cross-connects and extra wiring, along with extra equipment, when it sought to combine BellSouth's loop and switch, when BellSouth itself did not use this extra equipment to combine the two elements. The Commission noted that the Eighth Circuit itself found that CLECs had the right to offer service through unbundled network elements without having to add cross-connects or other elements of their own. By restating this ruling in its 706 Order, the Commission would make clear the general point that ILECs may not deny access to network elements on the theory that they cannot be separated.

Reiteration of that point would also address a particular form of discrimination as it relates to xDSL service. The only place the xDSL loop can be separated (or re-combined) before it reaches the packet switch is at the connection between the copper loop and the DSLAM.<sup>7</sup>

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<sup>7</sup>At the other places at which the ILEC combines the component parts of its data network, between the DSLAM and the data transport, or between the transport and the switch, there is no way either for the ILEC to separate the elements (without disconnecting all of its own customers) or for a CLEC to recombine the elements once they have been separated. As we indicated above, supra pp. 9-12, nothing in the Eighth Circuit decision can be read to give the ILEC the right to refuse to provide elements in combination on the ground that it is unable to take those elements apart without destroying its network.

While such separation is necessary and unobjectionable when the CLEC wishes to use its own DSLAM, the ILEC predictably will also insist on such separation even when a CLEC wishes to lease from the ILEC both the xDSL-capable loop and the DSLAM. But the method of combination they propose is exactly the same method requiring needless collocation the Commission rejected in the BellSouth application: First, the ILEC pointlessly separates the loop from the DSLAM; then the ILEC sends the loop to the CLEC's collocation; then the ILEC sends a connection to the DSLAM to the collocation; and then the CLEC is required to re-combine the two elements.

Based on the same analysis it reached in the BellSouth Louisiana II 271 application, if a CLEC wishes to lease the ILEC's DSLAM, the Commission could and should require ILECs to provide CLECs access to this leased element at the only place such access is possible: the network side of the packet switch. And it should make clear that the ILEC may not pointlessly separate the DSLAM from the loop and require CLECs to lease unnecessary collocation space if they wish to lease the ILEC's DSLAM.

## 2. Unbundling -- Long-Term Solutions Requiring Open Network Architecture.

In the longer term the ILECs should be required to install multi-hosted DSLAMs into the network, and to upgrade existing DSLAMs to enable them to multi-host. Alternatively, they should be required to install small "edge" switches in each central office in which they have a DSLAM to enable competitors to pick up data traffic without having to purchase the ILECs' data transport and data switching.

As indicated above, current technological limitations mean that CLECs have no choice but to pick up their customer's data traffic at whatever central office the ILEC happens to have

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located its data switch. And CLECs will have to pay (at cost-based rates) for transit to the ILEC's chosen location whether or not the CLEC itself would have to chosen to direct the traffic as the ILEC has.

For robust facilities-based competition to develop, competitors should not have to rely on so much of the ILEC's xDSL network. The solution is for CLECs to be able to choose to capture their data traffic immediately after it passes through the DSLAM, or alternately to choose to capture the traffic after it passes through the switch. Then competitors would be able to construct competing networks when it makes sense for them to do so, moving and concentrating traffic as they see fit, rather than being forced to rely on the ILEC network.

The current generation of DSLAMs do not provide multi-hosting capabilities, and the ILECs (who are by far the largest customers of the DSLAM vendors) have no incentive to ask the vendors to develop such open network architecture. Yet these vendors have told MCI WorldCom that it would not be overly difficult, expensive, or time-consuming to develop multi-hosting DSLAMs. It is, rather, simply not a feature their ILEC customers have demanded.

The situation is closely analogous to that present when the Commission was required by section 251(e) to oversee a competitive system of local number portability. The Commission found that the technology did not currently exist to support such a system. Its response was to mandate a short-term fix, and then to order the ILECs to work with their vendors and by a date certain devise a technology that would support permanent local number portability. Here, the only way to assure that the ILECs will install a data network that can be efficiently shared by competitors is to order them to do so. Thus, the Commission as part of its rules requiring unbundled access to DSLAMs should require that all DSLAMs installed in the network after

some date certain -- perhaps in the year 2000 -- should be capable of multi-hosting, and that two years after that all DSLAMs in the network should have that capability.

Alternatively, by those dates ILECs should be required to install "edge" switches or similar devices in every central office in which they have a DSLAM, allowing other carriers to pick up their data traffic at the ILEC central office. These small and relatively inexpensive packet switches -- which exist today -- function in part as routers. Traffic that passes through all of the DSLAMs in a central office could be directed to the edge switch, and then the traffic of each carriers' customers could be segregated, so that each carrier offering xDSL service to customers served through that central office would be able to pick up its customers' traffic at the edge switch, and then transport that traffic to its own packet-switched network. In this network configuration, there would be no need for CLECs to collocate, and any collocation requirement would be discriminatory. Instead, each CLEC would have the option of connecting its interoffice transport directly to the edge switch, or of leasing interoffice transport from the ILEC.

If the Commission were to clarify the ILEC's obligation to unbundle the component elements of their xDSL networks in the manner indicated in these comments, it would greatly facilitate the development of competition in the provision of xDSL service.